FUTUREHOUSE™ PRODUCTS

for the ATARI 400/800

EDUMATE™ LIGHT PEN FEATURES

1. Menu Selection
2. Compatible with Learning Center™ educational software
3. Draws pictures
4. Games
5. Applications
6. Sample programs included

$29.95 cassette, $34.95 diskette

programmer's institute

a division of **FUTUREHOUSE™**

310½ West Franklin Street
P.O. Box 3470, Chapel Hill, NC 27514

1-800-334-SOFT

orderline

GENERAL INFORMATION

The Edumate™ Light Pen was designed to fill a void in the available data entry devices for the ATARI 400/800 and VIC-20 computers*. The Edumate™ Light Pen can be used to select menu options and to enter answers to questions. It is not intended to be used as a drawing device for high-resolution modes. The Programmer's Institute is currently developing a drawing routine, games, and a variety of applications compatible with the Edumate™ Light Pen.

*Also available for the Commodore 64

MINIMUM EQUIPMENT REQUIRED

- Atari 400/800
- 16K RAM
- Atari Basic Language Cartridge
- Atari 410 Program Recorder
- Black and White Television

Optional Equipment

- Atari 810 Disk Drive (16K) RAM
- Color Television

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LOADING FROM THE CASSETTE

1. Connect the ATARI Personal Computer System as described in your ATARI Operator's Manual.
2. Make sure you have installed the ATARI Basic Language Cartridge in your computer.
3. Make sure you have your ATARI Program Recorder attached to your computer.
4. Turn on your television set.
5. Turn on the computer.
6. Place the cassette tape in the Program Recorder.
7. Advance tape to 10, 49 on the Line Counter of your cassette recorder.
8. Type CLOAD on the computer and press the [RETURN] key.
9. After the computer has beeped, press [PLAY] on the recorder and then press the [RETURN] key for the second time.
10. The computer will now load the program.
11. When the READY prompt appears on the screen, type RUN and press the [RETURN] key.

LOADING FROM DISK

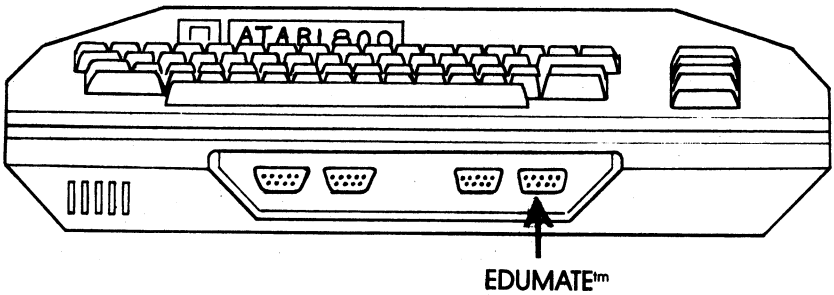
The Edumate™ Disk has an Auto-boot System.

- Turn on your disk drive
- Insert the Edumate™ Disk
- Turn on your ATARI
- The Auto-boot System will automatically load the Disk Utility program
- Connect the Light Pen and touch it to the screen to load the appropriate program
- The Disk Utility will load only BASIC programs.

CONNECTING EDUMATE™ TO THE COMPUTER

ATARI 400/800

The Edumate™ Light Pen is connected to the ATARI 400/800 **controller jack number 4.** If the Edumate™ is connected to jacks 1, 2, or 3 of the ATARI 400 *it will not operate.*



TECHNICAL INFORMATION

We will first cover some general information about light pen operation. The Edumate™, like all video light pens, works by detecting the light beam on the computer's screen. When the beam passes the pen's sensor, the pen signals the computer to save two values representing the position of the beam on the computer's screen. It will then use this information to calculate the position of the pen.

The light pen works best with screens that have dark backgrounds and bright characters.

The ATARI computer gives reliable light pen readings in the vertical axis. This allows us to do vertical selecting with little or no effort. However, it seems to have a problem giving reliable readings for horizontal position detection. This makes our job more difficult, but not impossible.

PROGRAMMING

Vertical pen position can be retrieved by PEEKing the vertical light pen register and then applying the correct scaling factors.

Horizontal position can be retrieved by peeking the horizontal light pen register twice and checking the two readings to see if they are within two of each other. Then, the position of the light pen can be determined by applying the correct scaling factors to one of the retrieved values. Because of the problem in the horizontal axis, you will not be able to discriminate between two adjacent characters on the same line. You will need to use several blanks between the desired characters.

The following routines should enable you to use the Edumate™ Light Pen with a minimum of effort. The enclosed routines return the pen's vertical and horizontal character cell positions.

ATARI MEMORY LOCATIONS

Decimal	*Description*
564	Horizontal position (76-224 0-16)
565	Vertical position (16-111)
53277	#4 trigger control 0=reset 4=latched
53267	#4 trigger status 1=no pen 0=in use
87	Screen mode 0, 1, 2, etc.

DISK UTILITY

The following routine leaves the vertical position in V and the horizontal position in H. This routine will check to see if a light pen is active and it will return data only if a pen is active.

```
17000 POKE 53277,0 : POKE 53277,4
17010 IF PEEK (53267)=1 THEN [see note 1]
17020 GOTO 17021+PEEK (87)
17021 HS=4 : VS=4 : GOTO 17030
17022 HS=8 : VS=4 : GOTO 17030
17023 HS=8 : VS=8
17030 V=PEEK (565)
17040 H1=PEEK (564) : H2=PEEK (564)
17050 IF H1<H2-1 OR H1>H2+1 THEN 17040
17060 IF H1<76 AND H1>16 THEN 17040
17070 V=INT ((V-16)/VS)
17080 H=H1
17090 IF H<76 THEN H=225+H
17100 H=H-76
17110 H=INT (H/HS)
17120 POKE 77,0
17130 [see note 2]
```

Note 1: point this to your routine to handle no light pen data (example 17000)
Note 2: point this to your handler for position data

The Edumate™ Menu is a utility that will allow the user to select and run BASIC programs. The program is simply added to any disk and when it is run, it will allow you to select programs from the disk menu using the Edumate™ Light Pen or a single letter key.

We have selected this program to demonstrate vertical menu selection using the Light Pen.

Below is a description of the program lines used to implement the Edumate™ Light Pen. The routines we use to implement the pen are located between line numbers 2000 and 2070.

2000 check to see if any keyboard activity
2020 set up light pen latch
2030 check for light pen activity—return to keyboard check if none
2040 read vertical row value

2050 scale row value for mode 0
2060 scale row value to match input selection (1-11)

PROGRAM LISTING

```
  5 GOSUB 7000
 10 DIM M$(2000), I$(17), L$(17)
 20 OPEN #1, 6, 0, "D:*.*"
 30 E=1
 40 INPUT #1, I$
 50 IF LEN(I$)=16 THEN CLOSE #1 : OPEN #1, 4, 0, "K:" : FOR Q=1
    to 2000 : NEXT Q : GOTO 100
 60 M$(LEN(M$)+1)=I$
 70 E=E+17 : GOTO 40
100 L=E/17 : N=1 : P=0 : Q=1
110 IF N=1 THEN GOSUB 1000
120 POSITION 2, N*2 : ? CHR$(192+N) ; M$(Q, Q+16)
130 Q=Q+17 : N=N+1
140 IF N=11 THEN N=1 : GOTO 2000
145 IF Q>LEN(M$) THEN 2000
150 GOTO 110
1000 GRAPHICS 0 : SETCOLOR 2, 2, 0 : SETCOLOR 1, 2, 12
1005 POKE 752, 1
1010 POSITION 10, 0 : ? "EDUMATE MENU"
1020 POSITION 2, 22 : ? "K NEXT PAGE OF MENU"
1040 RETURN
2000 IF PEEK (764)<>255 THEN 2100
2020 POKE 53277, 0 : POKE 53277, 4
2030 IF PEEK (53267)=1 THEN 2000
2040 V=PEEK (565)
2050 V=INT ((V-16)/4)
2060 A=INT (V/2)
2070 GOTO 5000
2100 GET #1, A
2110 A=A-64
5000 IF A<1 OR A>11 THEN 2000
5010 IF A=11 AND Q>LEN (M$) THEN 100
5020 IF A=11 THEN P=P+1 : GOTO 110
5030 LO=P*170+17*(A-1)+3
5035 IF LO>LEN (M$) THEN 2000
5040 I$=M$(LO, LO+10)
```

```
5050 L$=""
5055 L$="D:"
5060 FOR Z=1 TO 11
5070 IF I$(Z, Z)<>"" THEN L$(LEN(L$)+1)=I$(Z, Z)
5080 IF Z=8 THEN L$(LEN(L$)+1)="."
5090 NEXT Z
6000 TRAP 6500
6010 RUN L$
6500 TRAP 40000
6510 SOUND 1, 33, 12, 10 : FOR Z=1 TO 50 : NEXT Z : SOUND 1, 0, 0, 0
6520 GOTO 2000
7000 GRAPHICS 2 : POKE 752, 1
7010 SETCOLOR 1, 3, 8 : SETCOLOR 2, 3, 2
7020 POSITION 6, 3 : ? #6; "EDUMATE"
7030 POSITION 7, 5 : ? #6; "MENU"
7040 ? : ? "Copyright (c) 1983 by FUTUREHOUSE"
7050 ? "  written by Bruce Mitchell"
7060 RETURN
```

LIKE SYMBOL DISCRIMINATION

The program "Like Symbol Discrimination" is a program designed to give preschoolers practice in matching complex like symbols.

This program was selected because it demonstrates the use of the Edumate™ Light Pen to detect both vertical and horizontal pen position.

Below is a description of the program lines used to implement the Edumate™ light pen.

1000 check to see if last key pressed is still pressed
1010 clear keyboard
1020 set up light pen latch
1030 check for keyboard activity
1040 check for light pen activity—if none, return to check keyboard
1050 get vertical value
1060 read horizontal value twice
1070 check horizontal value good
1080 check horizontal value in range
1090 scale vertical value

1100 set H to horizontal value
1110 adjust for horizontal delays
1120 set up left of screen
1130 scale horizontal
1140-1170 set A to answer corresponding to pen location
1180 if no correct answer, return to beginning of routine

GENERAL INFORMATION

Special Program Features:
- Instant Sound and Visual Feedback
- Simple Displays
- Simple Program Operation
- Protected Keyboard
- Classroom Tested
- Pleasing Graphics
- Hold User's Attention
- Light Pen Compatible

Grade Level:
- Preschool — Kindergarten

Program Objectives:
- The child will be able to select the letter that is different from a group of four different letters
- Assist teachers and parents in providing drill in letter discrimination

Prerequisite:
- Child should have mastered shape discrimination

Teaching Technique:
- Drill

Level of Teacher/Parent Involvement:
- Loading Program
- First time explanation of program operation
- Connecting the light pen to the computer

Skills Used and Developed:
- Recognition of letters that are different

Encourages Development in:
- Identifying the numbers 1, 2, 3, and 4
- Position of the numbers 1, 2, 3, and 4 on the keyboard
- Refine motor skills when the light pen is used

Number of Simultaneous Users:
- One

OTHER FINE PRODUCTS FROM FUTUREHOUSE FOR ATARI 400/800 AND THE VIC-20

THE LEARNING CENTER

"Perhaps the finest educational software that I have ever had the pleasure of reviewing. It's easy for kids to use and effective in teaching basic concepts and skills.... My kids are learning with it right now!"

Fred D'Ignazio, Educational Editor—*Compute!*, Associate Editor—*Softside*,
Author of bestseller—*Katie and the Computer*

We hope you've been using your **ATARI** for more than just games ... it is, and can be, a valuable educational tool for you and your children.

Bruce and Dianne Mitchell realized this potential and designed a series of programs for use in their Small World Preschool & Kindergarten located in Durham, N.C. Presented on TV's *PM Magazine* these unique educational programs will introduce your 3-9 year olds to the era of learning with computers. Using the graphics and sound capabilities of the Atari, each program develops a particular skill and reinforces correct responses with happy faces and music.

Beginning with basic concepts such as colors, shapes and the alphabet, your child will progress to an understanding of counting, arithmetic, and language skills

Widely acclaimed, classroom designed and tested, these unique educational tools are now available to you ... *for your children.*

SPECIAL SKILLS	Preschool	K	1	2
* Color For The Non-Reader	●	●		
* Name That Color		●	●	
* Like Shape Identification	●	●	●	
* Different Shape Identification	●	●	●	
Cave Game	●	●	●	●
MATH AND NUMBER SKILLS				
Count With Me	●	●	●	
Number Recognition	●	●	●	●
Addition		●	●	
Subtraction		●	●	
Add.—Vertical/Horizontal		●	●	
Sub.—Vertical/Horizontal		●	●	
Advanced Addition/Subtraction		●	●	●
Ones and Tens			●	●
LANGUAGE SKILLS				
Alphabet Recognition			●	●
Letter Sequence	●	●	●	
* Like Symbol Discrimination	●	●		
* Different Symbol Discrimination	●	●		

Pricing Information	Cass.	Disk
Single Program	8.95	n/a
Special Skills	29.95	34.95
Language Skills	24.95	29.95
Math and Number Skills	44.95	49.95
Complete Set	74.95	79.95
Edumate™ Light Pen	34.95	

	Cass.	Disk
Pre-School	46.95	51.95
Kindergarten	69.95	74.95
First Grade	64.95	69.95

Add $2.00 for postage & handling

* Compatible with our Edumate™ Light Pen

NOTE: All software requires 8K cassette/16K disk

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Prices are subject to change without notice.

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Total Enclosed	

☐ Check or Money Order enclosed
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